**Series DSTC**

**SANITARY TRI-CLAMP® DIAPHRAGM SEAL**

REOTEMP’s Sanitary Tri-Clamp® Diaphragm Seals are ideal for applications in the food and beverage, dairy, and pharmaceutical industries or wherever Tri-Clamp connections are used. Reotemp will mount and fill a variety of instruments to Tri-Clamp seals including Digital Pressure Gauges, Transmitters, and Switches. All Sanitary Diaphragm Seal Assemblies manufactured by Reotemp are 3-A Certified.

**SPECIFICATIONS**

| Materials | Body: 316L  
| Diaphragm: 316L |

**Process Temperature Limits**

<table>
<thead>
<tr>
<th>Process Connection</th>
<th>3/4&quot;</th>
<th>1.5&quot;</th>
<th>2&quot;</th>
<th>2.5&quot; &amp; 3&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Limit</td>
<td>0/150°F</td>
<td>-40/250°F</td>
<td>-40/400°F</td>
<td>-40/750°F</td>
</tr>
</tbody>
</table>

**Ambient Temperature Limits**

Determined by the pressure instrument.

**Wetted Surface Finish**

18-24 Ra

**HOW TO ORDER:** Choose options to build a part number. For example: DSTC20SS4-DWD-BN-OX

<table>
<thead>
<tr>
<th>DSTC</th>
<th>20</th>
<th>SS</th>
<th>4</th>
<th>-DWD</th>
<th>-BN</th>
<th>-OX</th>
</tr>
</thead>
</table>

**MODEL**

| DSTC = Diaphragm Seal  
| Sanitary Tri-Clamp  
| DSCI = Diaphragm Seal  
| "I"-Line Cherry Burrell |
| Size | 75 = 3/4" (Also Fits a 1/2" Clamp)*  
| 15 = 1 1/2" (Also Fits a 1" Clamp)  
| 20 = 2"  
| 25 = 2.5"  
| 30 = 3"  
| 40 = 4" |

**Material**

| SS = 316L SS  
| HC = Hast. C-276 |

**Instrument Connection**

| 4 = 1/4" NPT  
| W = Low-Volume |

**Mounting**

| -DWD = Direct Mount, All Welded  
| -DWD = Direct Mount, Threaded (not standard for sanitary applications)  
| -RTR = 6" Cooling Tower, Welded  
| -STW = 3" Cooling Standoff  
| -WXX = PVC Coated SS Armored Capillary, Welded to Seal, XX = length in feet |

**Fill Fluid**

| -AG = Glycerin  
| -BN = NEOBEE M20  
| -AS = Silicone DC200  
| -BS = Food-Grade Silicone  
| See Page 58 for Complete Fill Guide  
| -EP = Electropolished Diaphragm  
| -OX = Cleaned for Oxygen or Chlorine Service (shipped in sealed bag)  
| -TS = SS Tag (1-10 Characters) |

**Options**

| -YYY = No Instrument Mount, Dry Seal Only  
| -XX = No Fill Fluid |

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Diaphragm: 316L  
Process Temperature Limits  
Ambient Temperature Limits  
Wetted Surface Finish  
Mounting  
Fill Fluid  
Options

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(800) 648-7737  sales@reotemp.com  reotemp.com  PTC-0817
Diaphragm Seals

SMART TRANSMITTER ATTACHMENT

Balanced System A complete assembly with one part number that includes two diaphragm seals, two capillaries, two fills, and one complete assembly calibration certificate.

Unbalanced DP System Where seal, mount, capillary, or fill is not identical. A complete assembly includes one diaphragm seal on the HP side AND one diaphragm seal on the LP side.

HOW TO ORDER: Unbalanced System Example

-RR
-RA

Balanced System
-RR Identical system on HP and LP Sides, capillary exit through process connections. Capillary mounts only.

Example: W9FFWR31S-B10-AS-RA

-RA Identical system on HP and LP sides, capillary exit through face of cover flange. Capillary mounts only.

Differential Pressure Assembly

Unbalanced DP System

-RH Mount via Process Connections Side High Pressure

-RL Mount via Process Connections Side Low Pressure

-RB Mount via Face of Cover Flange Side High Pressure

-RC Mount via Face of Cover Flange Side Low Pressure

Gauge Pressure Assembly

In Line Pressure Transmitter

-R1 Mount to In-Line Gauge Pressure Transmitter. Direct or remote mount.

Horizontal Mount (Tank Mount) to In-Line Gauge Pressure Transmitter. Direct mount only.

Traditional Mount for Gauge Pressure Seal mount on one side only, other side is vented.

-R2 Instrument mount through process connections, HP Side. Use “R3” if mounting to LP side

-R8 Instrument mount through face of cover flange, HP Side. Use “R9” if mounting to LP Side
REOTEMP specializes in the unique craft of assembling diaphragm seals to field transmitters for the purpose of measuring pressure, differential pressure, level, and flow. As a trusted supplier to many of the world’s leading transmitter manufacturers, REOTEMP can assemble a diaphragm seal system to virtually any make or model transmitter. Every transmitter mount includes the features below to ensure superior performance and durability for every assembly. REOTEMP also offers repair, refurbishment or replacement of used transmitters with remote seals.

**STANDARD FEATURES ON ALL REOTEMP ASSEMBLIES**

- Tamper-Proof Inspector Seal on All Threaded Joints
- Static Vacuum and Pressure Test (DP Assemblies Only), Verifying Filled System Integrity
- All-welded Capillary and Stand-off Connections
- Helium Leak Checked Diaphragm and Post-fill Assembly Leak Test
- Configuration of Transmitter to Customer Specified Span
- 5pt. NIST-traceable Certificate of Calibration of Final Assembly
- Vacuum Evacuated Fluid and Instrument Chamber to 1x10^-8 mbar Absolute
- All-welded Direct Mount Standoffs (2mm ID Capillary Inside for Fill Fluid Minimization)
- 100% Pure Fill Fluid with Minimum 24 Hour De-gassing
- Low Volume Modification to Factory Cover Flanges
DIAPHRAGM SEALS

INSTRUMENT MOUNTING CONFIGURATIONS

DIRECT MOUNT

Direct Mounting a pressure gauge, switch, or transmitter is the most common diaphragm seal assembly.

- Threaded
- Welded

- Allows Replaceability
- High Quality Thread Sealant
- Inspector Seal
- Tamper Proof
- Rated for High Temps
- Leak Resistant

Code | Description | Max. Temp |
--- | --- | --- |
-DTD | Threaded Instrument Connection | 400°F |
-DWD | Welded Instrument Connection | 600°F |

Assembly Notes: Welded connection recommended for pressure exceeding 1,500 psi for purposes of leak prevention.

REMOTE MOUNT

Remote Mounting a pressure instrument using flexible capillary is a common mounting method when the point of measurement is in a hazardous or inconvenient location.

- PVC Coated SS Flex Armor
- SS Flex Armor

Code | Description | Max. Temp |
--- | --- | --- |
-P?? | PVC Coated SS Armor, Threaded to Seal | 400°F |
-W?? | PVC Coated SS Armor, Welded to Seal | 600°F |
-A?? | SS Flexible Armor, Threaded to Seal | 400°F |
-B?? | SS Flexible Armor, Welded to Seal | 750°F |

Note: ?? = Length in feet (e.g. 05 = 5 feet)

Assembly Notes: Capillary has a 2mm inner diameter unless specified differently by customer. Ambient temp limit of PVC coated armor is 250°F. Standard instrument connection is threaded (Smart Transmitters are welded), unless specified by customer.

COOLING ELEMENTS

Used in either high temp or cold temp applications, Cooling Elements mounted above diaphragm seals quickly normalize fluid temperature toward ambient. This protects the pressure instrument while still maintaining the convenience of a direct mount.

- RTR
- STW

Code | Description | Max. Temp |
--- | --- | --- |
-RTR | 6” Cooling Tower | 750°F |
-STW | 3” Cooling Standoff | 600°F |

Assembly Notes: Cooling elements are welded to diaphragm seal. Instruments are threaded to cooling element unless specified. All lengths are nominal.

TREE ASSEMBLIES

Tree Assemblies offer the ability to mount two pressure instruments onto one diaphragm seal, allowing the user to gain both a local indication and a remote signal without adding an additional pipe insertion.

- TRE & -TRX
- TRM

Code | Description | Max. Temp |
--- | --- | --- |
-TRE | Goal Post, Low Pressure Assembly (Max. 150 psi) | 400°F |
-TRX | Goal Post, Heavy Duty (Max. 3,000 psi) | 600°F |
-TRM | Compact Tree Assembly (Max. 3,000 psi) | 600°F |

Assembly Notes: Threaded joints are fully welded for consistent instrument orientation. Instrument connections are threaded unless specified by customer. Diaphragm seal must displace enough fluid to drive both instruments.
Diaphragm seals are designed to protect pressure instruments from hot process media and corrosive chemicals while minimizing any negative effect on instrument accuracy and durability. A well-made diaphragm seal can achieve this goal only if it is properly assembled, filled, and tested. REOTEMP’s highly trained technicians use state-of-the-art equipment so that every diaphragm seal assembly is filled and tested to assure optimal instrument performance:

- 24-hour Minimum Fluid De-gassing
- Evacuated Instrument Chamber Up to 10^4 mbar Absolute
- Complete Fill Integrity Check
- Fill-port Leak Test
- Post-fill Static Test
- Verification of Instrument Calibration
- High-temp Pipe Sealant Used on All Threaded Joints (Welded Joints Upon Request)
- Tamper-proof (Inspection Seal) Lacquer used on All Threaded Joints
- Sturdy Diaphragm Packaging Protection

### FILL GUIDE

#### STANDARD FILL FLUID

<table>
<thead>
<tr>
<th>Part Number Code</th>
<th>Name</th>
<th>Description</th>
<th>Temperature Range (Vacuum Service &lt;5psia)</th>
<th>Viscosity cst @ ~77°F</th>
<th>Specific Gravity @ ~77°F</th>
<th>Thermal Expansion cc/ccºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>Silicone DC200&lt;sup&gt;1&lt;/sup&gt;</td>
<td>This is the standard fill fluid for most diaphragm seal applications.</td>
<td>-40°F to 400°F (-40°F to 250°F)</td>
<td>Yes</td>
<td>20</td>
<td>0.94</td>
</tr>
</tbody>
</table>

#### HIGH TEMP SILICONE

<table>
<thead>
<tr>
<th>Part Number Code</th>
<th>Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BH</td>
<td>Silicone DC704&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Standard for Smart Transmitters and capillary systems. Performs well in applications with high temperature and a deep vacuum.</td>
<td>0°F to 650°F (0°F to 450°F)</td>
<td>No</td>
<td>44</td>
<td>1.07</td>
</tr>
<tr>
<td>B1</td>
<td>Silicone DC710&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Highest temperature rating; ideal for gauge seal assemblies. Too thick for capillary assemblies. Response time can become very slow in cold conditions.</td>
<td>50°F to 750°F (50°F to 400°F)</td>
<td>Yes</td>
<td>500</td>
<td>1.11</td>
</tr>
<tr>
<td>C8</td>
<td>Syltherm 800&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Low viscosity allows it to perform well in both low and high temperatures. Not recommended for vacuum service or at high temperatures when under low static pressure.</td>
<td>-40°F to 750°F (-40°F to 150°F)</td>
<td>No</td>
<td>9.5</td>
<td>0.93</td>
</tr>
<tr>
<td>B5</td>
<td>Silicone DC705&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Performs very well in high temperatures when under vacuum. The high viscosity and freezing point of this fluid makes it a poor choice for cold or outdoor installations without heat tracing.</td>
<td>50°F to 675°F (50°F to 550°F)</td>
<td>Yes</td>
<td>175</td>
<td>1.09</td>
</tr>
<tr>
<td>B2</td>
<td>Silicone DC550&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Similar high temperature performance as DC705, however it performs better at lower temperatures.</td>
<td>-40°F to 575°F (-40°F to 400°F)</td>
<td>No</td>
<td>125</td>
<td>1.07</td>
</tr>
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</table>

#### FOOD GRADE

<table>
<thead>
<tr>
<th>Part Number Code</th>
<th>Name</th>
<th>Description</th>
<th>Temperature Range (Vacuum Service &lt;5psia)</th>
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<th>Specific Gravity @ ~77°F</th>
<th>Thermal Expansion cc/ccºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG</td>
<td>Glycerin USP</td>
<td>This is the standard fill fluid for most gauge seal assemblies for food, beverage, and pharmaceutical applications. Its high viscosity will cause very slow response at times in low temperature and outdoor installations.</td>
<td>60°F to 450°F (Not Suitable)</td>
<td>Yes</td>
<td>1100</td>
<td>1.26</td>
</tr>
<tr>
<td>BN</td>
<td>NEOBEE M20&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Low viscosity and a wide temperature range makes this the standard sanitary fill fluid for Smart Transmitters and capillary systems.</td>
<td>-10°F to 400°F (-10°F to 200°F)</td>
<td>No</td>
<td>10</td>
<td>0.92</td>
</tr>
<tr>
<td>BS</td>
<td>Food Grade Silicone</td>
<td>Highest temperature limit for food grade fluids. Because of its high viscosity it does not perform well in low temperatures.</td>
<td>20°F to 550°F (20°F to 250°F)</td>
<td>Yes</td>
<td>350</td>
<td>0.97</td>
</tr>
<tr>
<td>BP</td>
<td>Propylene Glycol</td>
<td>This is the fill fluid used when Glycol is called for on the customer specification. It has a very narrow temperature range.</td>
<td>0°F to 200°F (Not Suitable)</td>
<td>No</td>
<td>2.85</td>
<td>1.03</td>
</tr>
</tbody>
</table>

#### INERT (TYPICALLY FOR CHLORINE AND OXYGEN APPLICATIONS OR IN SILICONE-FREE ENVIRONMENTS)

<table>
<thead>
<tr>
<th>Part Number Code</th>
<th>Name</th>
<th>Description</th>
<th>Temperature Range (Vacuum Service &lt;5psia)</th>
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<th>Thermal Expansion cc/ccºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Fomblin Y06&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Ideal inert fluid for transmitter applications. Relatively high vapor pressure above 200°F. Not recommended for use in high temperature situations with low static pressure.</td>
<td>-40°F to 450°F (0°F to 250°F)</td>
<td>No</td>
<td>71</td>
<td>1.88</td>
</tr>
<tr>
<td>C2</td>
<td>Halocarbon 6.3&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Standard inert fluid used in gauge seal assemblies.</td>
<td>-40°F to 400°F (-40°F to 250°F)</td>
<td>Yes</td>
<td>6.3</td>
<td>1.97</td>
</tr>
<tr>
<td>C3</td>
<td>Halocarbon 1.8&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Typically used in low temperature applications because of its low viscosity.</td>
<td>-110°F to 220°F (-100°F to 100°F)</td>
<td>No</td>
<td>1.8</td>
<td>1.82</td>
</tr>
<tr>
<td>C4</td>
<td>Fluorolube FS-5&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Similar performance to Halocarbon 6.3, however not suitable for vacuum service.</td>
<td>-40°F to 450°F (Not Suitable)</td>
<td>No</td>
<td>5</td>
<td>1.86</td>
</tr>
</tbody>
</table>

#### SPECIALTY

<table>
<thead>
<tr>
<th>Part Number Code</th>
<th>Name</th>
<th>Description</th>
<th>Temperature Range (Vacuum Service &lt;5psia)</th>
<th>Viscosity cst @ ~77°F</th>
<th>Specific Gravity @ ~77°F</th>
<th>Thermal Expansion cc/ccºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CK</td>
<td>Krytox 1506&lt;sup&gt;6&lt;/sup&gt;</td>
<td>Specialty fill fluid, inert.</td>
<td>-40°F to 350°F (-40°F to 300°F)</td>
<td>No</td>
<td>62</td>
<td>1.88</td>
</tr>
<tr>
<td>BE</td>
<td>Ethylene Glycol</td>
<td>Occasionally used in annular (O-ring) seal assemblies.</td>
<td>-28°F to 320°F (Not Suitable)</td>
<td>No</td>
<td>30</td>
<td>1.10</td>
</tr>
</tbody>
</table>

1 Trademark Dow Corning  
2 Trademark The Dow Chemical Company  
3 Trademark Halocarbon Product Corporation  
4 Trademark AUSIMONT S.P.A  
5 Trademark Hooker Chemical Company  
6 Trademark Stepan Specialty Products  
7 Trademark The Chemours Company FC, LLC

Note: PulsePlus™ fill fluids may have different physical properties than specified. Chemical composition and temperature ranges do not vary.
## Diaphragm Seals

**INSTRUMENTS**

Measuring your world since 1965®

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**DIAPHRAGM SEALS**

PTC-0817

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- Configure Part #
- Get Price
- Download PDF Data Sheets

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#### DIAPHRAGM SEAL OPTIONS

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<th>Option</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>-PP</td>
<td>Pulse Plus™</td>
</tr>
<tr>
<td>-AU</td>
<td>Gold Plated Diaphragm</td>
</tr>
<tr>
<td>-TC</td>
<td>Teflon Coated Diaphragm PTFE</td>
</tr>
<tr>
<td>-EP</td>
<td>Electropolished Diaphragm</td>
</tr>
<tr>
<td>-FW</td>
<td>Fill Port Welded Closed</td>
</tr>
<tr>
<td>-VF</td>
<td>Fill for Vacuum Service</td>
</tr>
<tr>
<td>-DG</td>
<td>Degreased, Shipped in Sealed Bag</td>
</tr>
<tr>
<td>-OX</td>
<td>Cleaned for Oxygen Service per ASME B40.1</td>
</tr>
<tr>
<td>-OY</td>
<td>Cleaned for Oxygen Service per MIL-STD-1330D</td>
</tr>
<tr>
<td>-GS</td>
<td>1/4&quot; SS Plug Installed</td>
</tr>
<tr>
<td>-JS</td>
<td>1/2&quot; SS Plug Installed</td>
</tr>
<tr>
<td>-GH</td>
<td>1/4&quot; Hast C Plug Installed</td>
</tr>
<tr>
<td>-JH</td>
<td>1/2&quot; Hast C Plug Installed</td>
</tr>
<tr>
<td>-GM</td>
<td>1/4&quot; Monel Plug Installed</td>
</tr>
<tr>
<td>-JM</td>
<td>1/2&quot; Monel Plug Installed</td>
</tr>
<tr>
<td>-TS</td>
<td>Stainless Steel Tag (1-10 Characters)</td>
</tr>
<tr>
<td>-TM</td>
<td>Stainless Steel Tag (11-80 Characters)</td>
</tr>
<tr>
<td>-TP</td>
<td>Paper Tag</td>
</tr>
<tr>
<td>-NC</td>
<td>Certificate of NACE Compliance</td>
</tr>
<tr>
<td>-CM</td>
<td>General Material Conformance</td>
</tr>
<tr>
<td>-MR</td>
<td>MTR - Mill Test Report Certificate</td>
</tr>
<tr>
<td>-PM</td>
<td>PMI - Positive Material Identification Certificate</td>
</tr>
<tr>
<td>-HT</td>
<td>Hydrostatic Test per ASME B31.3</td>
</tr>
<tr>
<td>-HL</td>
<td>Helium Leak Test Certificate</td>
</tr>
</tbody>
</table>

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**PULSATION PROTECTION (ONLY AVAILABLE WITH REOTEMP PRESSURE GAUGE MOUNTED TO SEAL)**

- PP

**DIAPHRAGM COATING**

- AU
- TC
- EP

**FILL**

- FW
- VF

**CLEANING AND FINISH**

- DG
- OX
- OY

**PLUG FOR FLUSH PORT**

- GS
- JS
- GH
- JH
- GM
- JM

**TAG OPTION**

- TS
- TM
- TP

**CERTIFICATION OPTIONS**

- NC
- CM
- MR
- PM
- HT
- HL

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1 Standard on MS8, available on MS4 & MS6.

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<table>
<thead>
<tr>
<th>MS4</th>
<th>MS6</th>
<th>WS</th>
<th>W6</th>
<th>T5</th>
<th>T6</th>
<th>V5</th>
<th>W9FF</th>
<th>W9XT</th>
<th>W9FP</th>
<th>DSTD75</th>
<th>DSTC75</th>
<th>DSTC15 AND LARGER</th>
<th>DSTF05</th>
<th>DSTF75 AND LARGER</th>
<th>OR</th>
<th>DXFR</th>
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N/A Indicates the option is not available

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Indicates that the option is available

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